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PALEONTOLOGY.—*A late Triassic terebratellacean from Peru.*[1]

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The brachiopod fauna of the present oceans consists predominantly of representatives of the Terebratuloidea. In this group the relation of the soft parts to the skeleton is relatively well known. For this reason they offer the most promising group within the Brachiopoda for purposes of evolutionary study. An excellent study (Cloud, 1942) of the basal terebratuloid stocks and their initial radiation during the late Silurian and Devonian furnishes a foundation for further work. In connection with studies undertaken for the *Treatise on invertebrate paleontology* the writer has completed a revision of Mississippian, Pennsylvanian, and Permian terebratuloids (unpublished). In combination these two studies reveal with reasonable clarity the major course of terebratuloid evolution during the Paleozoic.

Studies of recent forms have been carried back through the Tertiary (Thompson, 1927, and others), and many living genera are known to extend into the Cretaceous and some perhaps into the Jurassic as well. The main gap in our knowledge of terebratuloid phylogeny may be seen therefore to fall in the Triassic-Jurassic interval. As it happens it is during this interval, particularly the Triassic portion, that great innovations appear. Chief among these is the origin of the dominant modern superfamily, the Terebratellacea.

The recognition of Mesozoic terebratellaceans is frequently difficult. This difficulty arises principally in distinguishing them from other groups having long adult loops. The basic feature permitting separation of the terebratellaceans from these other groups is the metamorphosis of the loop during ontogeny and its intimate relation to the median septum. More or less complete ontogenetic series are therefore necessary for confident recognition.

The earliest definitely known terebratellacean reported in the literature appears to be *Hamptonina* of the Middle Jurassic. Particular importance therefore attaches to an undoubted terebratellacean species recently recognized in a collection of silicified material from the late Triassic of Peru. The importance of this form as the earliest known member of the superfamily and its evolutionary significance has prompted the description which is presented below.

PRESENT MATERIAL

The species here in question is represented by at least twenty fragmentary silicified specimens. They have been freed of the matrix by acid etching. The fragments present abundant internal detail, but the external form of the shell is incompletely known. All specimens are believed to represent juvenile individuals because of the immature beak characters displayed and the presumably incompletely metamorphosed loop. All individuals are of about the same size and suggest that a high degree of sorting was effected during their transportation to the burial site. Because it appears undesirable to me to propose a name for immature specimens which cannot now be identified with any adult, the species is merely described and may await naming when more complete material becomes available.

All specimens were obtained from lot 74 of the Jenks collection of Peruvian Triassic from the Cerro de Pasco region. They are housed in the American Museum of Natural History in New

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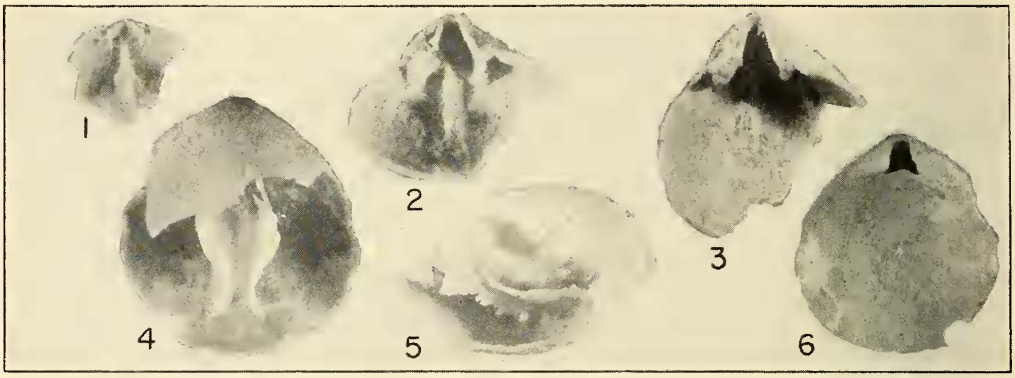

FIGS. 1–6.—An unnamed late Triassic terebratulloid brachiopod: 1, Interior of a fragmentary brachial valve showing the heavy median septum and the medially sessile cardinal plate with which it is connected; 2, interior of a fragmentary pedicle valve showing the open delthyrium and the dental plates; 3, interior of fragmentary pedicle valve showing the open, perhaps juvenile nature of the delthyrium; 4, more or less complete specimen showing the loop in place; 5, lateral view of the same specimen; 6, brachial interior of the same specimen.

York City. The strata from which lot 74 was collected have been dated on the basis of other fossils as late Triassic (Haas, 1953) and are part of the Pucara group.

DESCRIPTION

Shells small, the most complete specimen is 7.5 mm long, 7 mm wide, and appears to have been about 4 mm in thickness. The outline is slightly ovate; the pedicle valve is longitudinally and transversely convex; no fold or sulcus appears to be present, pedicle beak nearly straight; pedicle foramen unrestricted by deltidial plates, so that the delthyrium is open, and not transgressing on the apex of the beak. Brachial valve longitudinally and in general transversely convex but seemingly developing a shallow sulcus anteriorly.

Pedicle interior with short strong dental plates and a low myophragm dividing the muscle field and extending from the anterior

FIG. 7.—Profile of partly reconstructed individual.

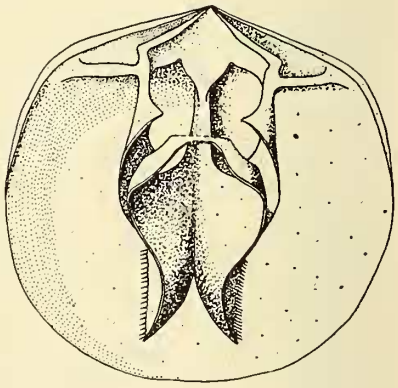

FIG. 8.—Diagrammatic reconstruction of the loop.

margin of the rostral cavity to about midlength, muscle scars poorly impressed. Brachial interior with the cardinal plate medially concave and supported by a low, broad septum which extends anteriorly past midlength to a union with the loop; crura arising from the inner margins of the socket plates; crural points small; main bands extend forward in an essentially centronelliform fashion and unite with the median septum and the remainder of the loop; recurving band consisting of two more or less vertically disposed plates which are concave inward and united at the apex of each concave surface; each plate arises from the median septum with which it is broadly joined by becoming gradually free at the lower margin; above their union with each other the two plates diverge only to be united posteriorly by a narrow transverse band which is not,

unfortunately, preserved in any specimen; the anterior extremities of the recurved band extend much farther forward than the main bands and bear spines as does the lateral margin of the main band; the positions of the muscle insertions cannot be determined.

DISCUSSION

The stage of loop development seen in this form does not closely resemble any stage in the development of the three major types distinguished by Elliott (1953) among modern forms. It most nearly approaches, however, the early stages of dallinid loop development. It seems probable that this form, if it can truly be referred to any modern family, should be placed in the Dallinidae. The principal basis for this conclusion is the general resemblance of the loop to that of the adult loop of the Cretaceous genus *Kingena*.

If these specimens are, as they seem to be, juveniles, this may account for the difficulty encountered in relating them to preexisting forms. Should they actually represent adults, the problem is even more difficult, for they do not closely resemble any known Paleozoic or Triassic genus. One possibility is that neoteny, an important feature in terebratuloid evolution, has intervened, obscuring relationships. Probably little more can be determined of the true relationships of this form until a comprehensive study of Triassic forms is carried out.

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BIOLOGICAL STUDIES AT POINT BARROW

The Eskimo birth rate is increased as much as threefold when the Arctic people eat "white man's food" instead of their traditional pure-animal diet of whale, fish, and seal. This is the observation of Prof. G. E. MacGinitie, of the California Institute of Technology, in a report recently published by the Smithsonian Institution on his biological investigations at the Navy's Arctic Research Laboratory at Point Barrow, on Alaska's Arctic coast.

"When hunting was the only means of subsistence," he writes, "Eskimo women became pregnant only once in several years, but with the new diet they bear a baby about every year. What will happen when outside support is shut off is an important and serious problem. Some few fathers are training their boys in hunting and other Eskimo skills, but most of them are content to let the future take care of itself. The situation is fast becoming a problem difficult of solution."

Of primary importance in the old Eskimo culture, Professor MacGinitie points out, is the bowhead whale. "Several," he says, "are taken in the spring of each year and the flesh is stored underground in cellars where it remains edible for three or four years. The whales feed on euphasiids, mysids, pteropods, and copepods, which are so abundant that the great blue whale can attain a weight of 60 tons in two years. Baleen whales probably lead the easiest life of any mammal. These enormous creatures have only to swim slowly through water, which has about the same specific gravity as themselves, opening and closing their mouths and swallowing food. To an Eskimo the most delectable food is whale muktuk, which consists of whale skin with about an inch of underlying blubber. After freezing, the muktuk is cut into small pieces and eaten raw. It has a nutty flavor and is really quite good.

"Perhaps next in importance in the native economy is the bearded seal. This marine animal, which reaches a weight of 500 to 600 pounds, feeds almost entirely on amphipods, using its whiskers for sweeping them from the underside of the ice. The teeth are very small and are of little use for holding or masticating food.

"In winter these seals are hunted in offshore leads. They float when shot, and so can be taken easily. In summer they are hunted in boats. Then they sink when shot and, if not immediately harpooned, are lost. On one summer hunt on which I accompanied my two boatmen, eleven seals were shot and seven were lost."